

What is claimed is:

1 A radio resource management method comprising the control steps of:

5 detecting the occurrence of interference between service areas provided by plural radio base stations; and
controlling transmission power of a radio base station for interference suppression in response to said occurrence of interference between service areas provided
10 by plural radio base stations.

2 The radio resource management method defined in Claim 1, further comprising the step of detecting the occurrence of interference based on radio link quality information
15 notified from each of said radio base stations.

3 The radio resource management method defined in Claim 2, wherein said radio link quality information comprises at least a radio link reception level;
20 and wherein said control step comprises the step of controllably reducing the transmission power of a radio base station, of which a reception level exceeds a predetermined threshold value and a current transmission power is more than a lower limit value, of radio base
25 stations using the same frequency as a frequency currently

used by said radio base station.

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4 A radio resource management apparatus comprising:
detector for detecting the occurrence of interference
5 between service areas provided by plural radio base
stations; and

controller for controlling transmission power of a
radio base station for interference suppression in
response to said occurrence of interference between
10 service areas provided by plural radio base stations.

5 The radio resource management apparatus defined in
Claim 4, wherein the occurrence of interference is
detected based on radio link quality information notified
15 from each of said radio base stations.

6 The radio resource management apparatus defined in
Claim 5, wherein said radio link quality information
comprises at least a radio link reception level; and
20 wherein said controller comprises means for controllably
reducing the transmission power of a radio base station,
of which a reception level exceeds a predetermined
threshold value and a current transmission power is more
than a lower limit value, of radio base stations using the
25 same frequency as a frequency currently used by said radio

base station.

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7 A radio base station in a radio communication system,
said radio communication system including plural radio
5 base stations each which provides a service area and a
radio resource management apparatus for managing radio
resources of said radio base stations, comprising:

means for measuring a radio link quality and then
notifying a radio resource management apparatus of radio
10 link quality information being a measurement result; and

means for responding transmission power control issued
from said radio resource management apparatus and then
controllably changing transmission power, to suppress
interference between service areas detected based on said
15 measurement result in said radio resource management
apparatus.

8 The radio base station defined in Claim 7, wherein
said notification means performs a notification operation
20 at predetermined notification intervals.

9 The radio base station defined in Claim 8, wherein
when said radio link quality exceeds a predetermined
threshold value, said notification interval is set longer
25 than said threshold value.

10 The radio base station defined in Claim 8, wherein
when a distribution value of a radio link quality measured
within a fixed period exceeds a predetermined threshold
5 value, said notification interval is set longer than said
threshold value.

11 A radio resource management method comprising the
steps of:

10 detecting the occurrence of interference between
service areas provided by plural radio base stations; and
and controlling its transmission power to suppress the
interference autonomously by each of said plural radio
base stations.

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12 The radio resource management method defined in
Claim 11, further comprising the steps of:

measuring information on a radio link quality in each
of said radio base stations and then mutually notifying
20 other radio base stations of measured information; and
controllably reducing the transmission power thereof
when a radio base station providing a maximum interference
to other stations is specified based on said radio link
quality information notified.

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13 The radio resource management method defined in Claim 12, wherein, when said maximum interference amount exceeds a predetermined value, said transmission power is reduced controllably.

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14 A radio base station comprising:

detector for detecting the occurrence of interference between service areas provided by plural radio base stations; and

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controller for controlling transmission power to suppress interference autonomously in response to said occurrence of interference between plural service areas.

15 The radio base station defined in Claim 14, further comprising:

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means for measuring information on a radio link quality and then mutually notifying other radio base stations of measured information; and

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means for controllably reducing transmission power when a maximum interference is provided to other station based on the radio link quality information notified from other radio base station.

16 The radio base station defined in Claim 15, when said maximum interference amount exceeds a predetermined

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value, said transmission power is reduced controllably.

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17 A radio resource management method comprising the steps of:

5 receiving information of radio link qualities from plural radio terminals; and

distributively controlling a load, being a radio terminal accommodated in a radio base station, based on said information of radio link qualities from plural radio terminals.
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18 The radio resource management method defined in Claim 17, wherein said radio link quality information includes information on link utilization to a radio base station, which is in communication with each of said radio terminals.
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19 The radio resource management method defined in Claim 18, wherein said control step comprising the step of performing load distributed control based on the sum of sets of said link utilization information to a radio base station in communication collected from respective radio terminals for each radio base station.
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25 **20** A radio resource management apparatus comprising:

receiver for receiving information of radio link
qualities from plural radio terminals; and

controller for distributively controlling a load,
being a radio terminal accommodated in a radio base
5 station, based on said information of radio link qualities
from plural radio terminals.

21 The radio resource management apparatus defined in
Claim 20, wherein said radio link quality information
10 includes information on link utilization to a radio base
station, which is in communication with each of said radio
terminals.

22 The radio resource management apparatus defined in
15 Claim 21, wherein said controller comprises means for
distributively controlling a load based on the sum of sets
of said link utilization information to a radio base
station in communication collected from respective radio
terminals for each radio base station.

23 A radio resource management method comprising the
steps of:

receiving information of radio link qualities from
plural radio terminals; and

controlling transmission power of a radio base station

based on said information of radio link qualities from plural radio terminals.

24 The radio resource management method defined in Claim 23, wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of said radio terminals; and wherein said control step comprises the step of controlling transmission power of said radio base station based on the sum of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

25 The radio resource management method defined in Claim 24, wherein said control step comprises the step of controllably reducing a transmission power of a base station where the sum of said reception levels exceeds a predetermined threshold value and the current transmission power is more than a lower limit value.

26 A radio resource management apparatus comprising:
receiver for receiving information of radio link qualities from plural radio terminals; and
controller for controlling transmission power of a radio base station based on said information of radio link

qualities from plural radio terminals.

27 The radio resource management apparatus defined in Claim 26, wherein said radio link quality information has a reception level from a neighboring radio base station measured by each of said radio terminals; and wherein said control means comprises the step of controlling transmission power of said radio base station based on the sum of reception levels from neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

28 The radio resource management apparatus defined in Claim 27, wherein said controller comprises means of controllably reducing the transmission power of a base station where the sum of said reception levels exceeds a predetermined threshold value and the current transmission power is more than a lower limit value.

29 A radio resource management method comprising the steps of:

receiving information of radio link qualities from plural radio terminals; and

controllably changing a frequency used by a radio base station based on said information of radio link qualities

from plural radio terminals.

5 **30** The radio resource management method defined in
Claim 29, wherein said radio link quality information has
a reception level from a neighboring radio base station
measured by each of radio terminals; and wherein said
control step comprises the step of controlling the
frequency of said radio base station based on an
interference amount being an average value of reception
10 levels from neighboring radio base stations of the same
frequency as the frequency used by an interested radio
base station.

15 **31** A radio resource management apparatus comprising
controller for controllably changing a frequency used by a
radio base station based on information on radio link
qualities notified from plural radio terminals.

20 **32** The radio resource management apparatus defined in
Claim 31, wherein said radio link quality information has
a reception level from a neighboring radio base station
measured by each of said radio terminals;

25 and wherein said control means controls the frequency
of a radio base station based on an interference amount
being an average value of reception levels from

neighboring radio base stations of the same frequency as the frequency used by an interested radio base station.

33 A radio terminal comprising:

5 means for measuring a radio link quality and then notifying a radio resource management apparatus of radio link quality information being the measurement result; and

means for responding distributed control indication for a load being a radio terminal accommodated in a radio base station, based on said radio link quality information, said distributed control indication being created from said radio resource management apparatus, and switching a radio base station to be connected.

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34 The radio terminal defined in Claim 33, wherein said notifying means performs a notifying operation at predetermined notification intervals.

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35 The radio terminal defined in Claim 34, wherein when a radio link quality exceeds a predetermined threshold value, said notification interval is set longer than that in the case of less than said threshold value.

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36 The radio terminal defined in Claim 34, wherein when a distribution value of a radio link quality measured

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within a fixed period exceeds a predetermined threshold value, said notification interval is set longer than that in the case of less than said threshold value.

5 **37** A computer readable program, that operably controls
a radio resource management apparatus in a radio
communication system, comprising the control step of:
responding occurrence of interference between service
areas provided by plural radio base stations and then
10 controlling the transmission power of a radio base station
to suppress the interference.

38 A computer readable program, that operably controls
a radio resource management apparatus in a radio
15 communication system, comprising a control step of
distributively controlling a load, being a radio terminal
accommodated by a radio base station, based on information
on radio link qualities notified from plural radio
terminals.

20 **39** A computer readable program, that operably controls
a radio resource management apparatus in a radio
communication system, comprising a control step of
controlling transmission power of a radio base station,
25 based on information on radio link qualities notified from

plural radio terminals.

40 A computer readable program, that operably controls
a radio resource management apparatus in a radio
5 communication system, comprising a control step of
controllably changing a frequency used by a radio base
station, based on information on radio link qualities
notified from plural radio terminals.

10 41 A computer readable program, that operably controls
a radio base station in a radio communication system, said
radio communication system including plural radio base
stations each providing a service area and a radio
resource management apparatus for managing radio resources
15 of said radio base stations, comprising the steps of:

measuring a radio link quality and then notifying said
radio resource management apparatus of radio link resource
information being a measurement result; and

20 responding transmission power control produced from
said radio resource management apparatus and thus
controlling a change of transmission power, to suppress
interference between service areas detected based on the
measurement result in said radio resource management
apparatus.

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42 A computer readable program, that computer controls the operation of a radio base station in a radio communication system, said radio communication system including plural radio base stations each providing a service area and a radio resource management apparatus for managing radio resources of said radio base stations, comprising the control step of responding occurrence of interference between plural service areas and controlling transmission power, to suppress interference autonomously.

43 A computer readable program for executing the operation of a radio resource management apparatus in a radio communication system, by means of a computer, comprising the control step of distributively controlling a load, being a radio terminal accommodated in a radio base station, based on information on radio link qualities notified from plural radio terminals.

44 A computer readable program for executing a radio resource management apparatus in a radio communication system, by means of a computer, comprising the control step of controlling transmission power of a radio base station based on information on radio link qualities notified from plural radio terminals.

45 A computer readable program for executing a radio
resource management apparatus in a radio communication
system, by means of a computer, comprising the control
step of controllably changing a frequency used by a radio
5 base station based on information on radio link qualities
notified from plural radio terminals.

46 A computer readable program for executing the
operation of a radio terminal by means of a computer,
10 comprising the steps of:

 measuring a radio link quality and notifying a radio
resource management apparatus of the radio link quality
information being the measurement result; and

 responding a distributed control indication of a load
15 based on said radio link quality information, said
dispersion control being created from said radio resource
management apparatus, said load being a radio terminal
accommodated in a radio base station, and thus switching a
radio base station to be connected.